

CLAIMS

What is claimed is:

1. A retainer clip for securing together a plurality of rings in a stack for handling for a variety of procedures such as processing, shipping and use in attachment to other members,

said retainer clip being of a wirelike construction and having an elongated connecting section, a support section located at the lower end of said connecting section for receiving and supporting the lower end of the stack of rings, and a resilient clamp section located at the opposite upper end of said connecting section and being resiliently movable to facilitate movement over the opposite upper end of the stack of rings and releasable to resiliently engage the opposite upper end of the stack of rings to retain them with pressure against the support section and being resiliently movable away from the opposite upper end of the stack of rings to permit removal of the rings from the stack.

2. The retainer clip of claim 1 with the rings having a predetermined width and thickness, said clamp section having a clamping segment with an open loop having an upwardly extending opening adapted to overlap the width and thickness of at least the one of the rings at the top of the stack.

3. The retainer clip of claim 2 with said support section having an open loop with a downwardly extending opening adapted to receive and overlap the width and thickness of at least the one of the rings at the bottom of the stack.

4. The retainer clip of claim 1 with said connecting section being substantially straight and of a generally fixed length.

5. The retainer clip of claim 3 with said connecting section being substantially straight and of a generally fixed length.

6. The retainer clip of claim 1 with said connecting section having a resilient extension segment whereby the overall length of said connecting section can be selectively increased over a predetermined range to accept rings in stacks of varying lengths.

7. The retainer clip of claim 6 with said resilient extension segment including a pair of spaced arms angulated apart at a preselected angle to permit resilient increase in said preselected angle and further separation of said spaced arms whereby rings in stacks of varying length can be accepted.

8. The retainer clip of claim 3 with said connecting section having a resilient extension segment whereby the overall length of said connecting section can be selectively increased over a predetermined range to accept rings in stacks of varying lengths.

9. The retainer clip of claim 2 with said clamp section having an actuating segment connected to said clamping segment for actuation of said clamping segment resiliently upwardly to accept the stack of rings in clearance and releasable to overlap at least the one of the rings at the top of the stack to thereby clamp the stack of rings together.

10. The retainer clip of claim 9 with said actuating segment being angulated upwardly away from said clamping segment.

11. The retainer clip of claim 9 with said actuating segment having an upwardly extending open loop adapted to be engaged from the inside of said

open loop for resiliently moving said clamp section with said clamp segment moved away from clamping engagement with the stack of rings.

12. The retainer clip of claim 11 with said open loop of said clamping segment and said open loop of said actuating segment having crests substantially at the same height.

13. The retainer clip of claim 1 with said connecting section having a resilient extension segment whereby the overall length of said connecting section can be selectively increased over a predetermined range to accept stacks of rings of varying lengths,

said extension segment being generally located in a plane extending generally transversely to said support section and said clamp section whereby said extension segment will be located in close proximity to the radially outer surface of the stack of rings to provide an overall compact assembly.

14. The retainer clip of claim 13 with said resilient segment including a pair of spaced arms angulated apart at a preselected angle to permit resilient increase in said preselected angle and further separation of said spaced arms whereby rings in stacks of varying length can be accepted.

15. The retainer clip of claim 13 with said resilient segment including a pair of spaced arms angulated apart at a preselected angle to permit resilient increase in said preselected angle and further separation of said spaced arms whereby rings in stacks of varying length can be accepted, said preselected angle being around 120°.

16. The retainer clip of claim 1 with said resilient clamp section being

resiliently movable to clamp stacks of rings in a range of varying lengths.

17. The retainer clip of claim 16 with said connecting section having a resilient extension segment whereby the overall length of said connecting section can be selectively increased over a predetermined range to accept rings in stacks of varying lengths in addition to the varying length of stacks provided by said resilient clamp section.

18. The retainer clip of claim 2 with said clamp section having an actuating segment connected to said clamping segment for actuation of said clamping segment resiliently upwardly to accept the stack of rings in clearance and releasable to overlap at least the one of the rings at the top of the stack to thereby clamp the stack of rings together, said actuating segment having an outer end with a substantially closed loop to provide a generally smooth surface at said outer end to facilitate engagement with said actuating segment.

19. The retainer clip of claim 9 with said support section being resilient and having a support segment and an actuating segment connected to said support segment for actuation of said support segment away from the stack of rings to accept the stack of rings in clearance and releasable to overlap at least the one of the rings at the bottom of the stack to thereby clamp the stack of rings together.

20. The retainer clip of claim 2 with said clamp section having an actuating segment connected to said clamping segment for manual actuation of said clamping segment resiliently upwardly to accept the stack of rings in clearance and releasable to overlap at least the one of the rings at the top of the

stack to thereby clamp the stack of rings together, said actuating segment having an outer end with substantially closed loop to provide a generally smooth surface at said outer end to facilitate the manual actuation.

21. The retainer clip of claim 20 with said support section being resilient and having a support segment and an actuating segment connected to said support segment for manual actuation of said support segment away from the stack of rings to accept the stack of rings in clearance and releasable to overlap at least the one of the rings at the bottom of the stack to thereby clamp the stack of rings together.

221. The retainer clip of claim 1 with said support section being resiliently movable to clamp stacks of rings of varying length.

23. The retainer clip of claim 22 with said connecting section having a resilient extension segment whereby the overall length of said connecting section can be selectively increased over a predetermined range to accept rings in stacks of varying lengths in addition to the varying length of stacks provided by said support section.

24. The retainer clip of claim 1 with said resilient clamp section and said support section being resiliently movable to clamp stacks of rings of varying length.

25. The retainer clip of claim 24 with said connecting section having a resilient extension segment whereby the overall length of said connecting section can be selectively increased over a predetermined range to accept rings in stacks of varying lengths in addition to the varying length of stacks provided by

said resilient clamp section and by said resilient support section.

26. The retainer clip of claim 1 with said connecting section having a resilient extension segment whereby the overall length of said connecting section can be selectively increased over a predetermined range to accept stacks of rings of varying lengths,

said extension segment being generally located in a plane extending generally radially transversely to the stack of rings whereby said extension segment will provide an opening to facilitate gripping of the stack of rings by the operator.

27. The retainer clip of claim 2 with said clamp section having an actuating segment connected to said clamping segment for actuation of said clamping segment resiliently upwardly to accept the stack of rings in clearance and releasable to overlap at least the one of the rings at the top of the stack to thereby clamp the stack of rings together, said actuating segment having an upwardly extending open loop adapted to be engaged from the inside of said open loop for resiliently moving said clamp from engagement with the stack of rings, said open loop of said actuating segment having an outer end with a substantially closed loop to provide a generally smooth surface at said outer end to facilitate engagement with said actuating segment.

28. The retainer clip of claim 2 with said clamp section having an actuating segment connected to said clamping segment for actuation of said clamping segment resiliently upwardly to accept the stack of rings in clearance and releasable to overlap at least the one of the rings at the top of the stack to

thereby clamp the stack of rings together, said actuating segment having a generally straight section extending radially from the end of said open loop of said clamping segment, the outer end of said straight section connected to a substantially closed loop section with the opening of said closed loop section facing upwardly whereby a generally smooth surface is provided at said outer end to facilitate engagement with said actuating segment.

29. The retainer clip of claim 28 with said actuating segment extending downwardly below said clamping segment.

30. The retainer clip of claim 1 with said wirelike construction having a cross-section with a diameter of around .080 inches.

31. A method of securing together a plurality of rings in a stack for handling for a variety of procedures such as processing, shipping and use in attachment to other members, comprising the steps of:

providing a retainer clip of a wirelike construction and having an elongated connecting section for securing said rings in the stack, said retainer clip having a support section located at the lower end of said connecting section for receiving and supporting one end of the stack of said rings, and a resilient clamp section located at the opposite upper end of said connecting section and being resiliently movable to facilitate movement over the opposite end of the stack of said rings and releasable to resiliently engage the opposite end of the stack of said rings to retain them with pressure against the support section and being resiliently movable away from the opposite end of the stack of said rings to permit removal of the rings from the stack.

32. The method of claim 31 including the step of securing said rings in the stack with at least three of said retainer clips.

33. The method of claim 31 with said rings being of a split ring type with a gap,

actuating said retainer clip to maintain said gap of each of said rings in alignment when said rings are held in a stack by said retainer clip.

34. The method of claim 33 including the step of securing said rings in the stack with at least three of said retainer clips.